SURFboard® SVG2501
Wireless Voice Gateway

IP telephony, high-speed data with router and firewall, integrated field-replaceable Lithium-ion battery backup, and a wireless access point converge in one convenient package.

Motorola's SVG2501 SURFboard Wireless Voice Gateway provides cable operators with an intelligent way to offer their customers high-speed data, landline, and mobile telephone services and an enhanced home network experience using a single broadband communication solution.

Seamless Mobility in a Stylish Package

Show your premium customers that you appreciate their business and you are serious about yours. Designed for seamless mobility, Motorola's SURFboard SVG2501 Wireless Voice Gateway is a fully integrated telecommunications solution that combines the functionality of a cable modem, embedded Multimedia Terminal Adapter (eMTA), four-port router with advanced firewall, an 802.11b/g wireless access point, and an integrated field-replaceable Lithium-ion backup battery—all in one convenient, sleek, stylish package for the sophisticated consumer.

The SVG2501 is an advanced, integrated, and robust residential and commercial telecommunications solution, ideal for seamless mobility and PacketCable™ Multimedia (PCMM) architectures. The SVG2501 combines all the IP functionality today's consumers demand, in a single compact and stylish unit.

High-Speed Internet Access

Four 10/100 Ethernet RJ-45 ports, an integrated DOCSIS 2.0 cable modem, and an integrated 802.11b/g wireless access point on the full-featured home network router provide both high-speed Internet access and a single platform for home networking, eliminating the need for stand-alone routers, hubs, and access points.

Digital Voice Telephone Service

The SVG2501 delivers up to two lines of primary-line digital voice telephone service (terminating in RJ-11 connectors) over cable's broadband connection to the home. Voice traffic is prioritized over Internet traffic, giving the user high-quality voice calls, even while surfing the Web. The SVG2501 also supports a variety of rich CLASS features, such as caller ID, call waiting, three-way calling, and call forwarding.

Wireless Gateway

An 802.11b/g/e/i wireless gateway allows consumers to network computers, gaming consoles, and other peripherals anywhere in the home.

With Motorola's SURFboard integrated home networking CPE solutions, cable operators can now offer a complete provisioning, configuration, management, and support system for their customers—from the gateway to the desktop and beyond.

User-friendly Installation

Motorola's integrated SVG2501 includes stateful firewall protection and WEP (Wired Equivalency Privacy). The SVG2501 is also equipped with a built-in, easy-to-use Motorola Wi-Fi installation wizard – a 'zero-touch' auto Wi-Fi provisioning tool – which seamlessly configures a secure Wi-Fi connection on a user's machine. When the Wi-Fi wizard is finished, a secure WPA (Wi-Fi Protected Access) encrypted wireless connection is established to the gateway, protecting the user's machine from hacker attacks. Motorola's embedded software enables Wi-Fi deployments with high levels of quality, reliability, and customer satisfaction, with low operational and support costs for the MSO.

Service Assurance

Supporting the Wi-Fi home network is a new challenge for the cable industry. As the leading worldwide provider of DOCSIS® products, Motorola is helping ease cable operators into Wi-Fi delivery. By combining the highest-performing and lowest cost of ownership modems in the industry, with easy-to-use Wi-Fi installation and pairing tools as well as advanced remote management features, the SVG2501 is offering an all-in-one approach to broadband home networking. In addition, Motorola's field-proven NBBS device management software platform provides the MSO with intelligent management, auto-provisioning, and remote management features to improve accuracy, efficiency, and customer satisfaction. These value-adding features enable remote device administration for improved accuracy and reduced support costs. The SVG2501 is compatible with Motorola's NBBS scalable, carrier-grade software platform that enables cable operators to remotely access, configure, monitor, and troubleshoot their full portfolio of consumer devices, home networks, and services. With Motorola's integrated SURFboard home networking CPE solutions and our advanced Remote Device Management Software Platform, cable operators can now offer their high-ARPU subscribers a complete customer care solution — provisioning, configuration, management, and support — from the gateway to the desktop and beyond.

Highlights[1]

Ease of use
Plug and play installation

Front-panel LEDs for power, data activity, and voice

Intuitive, Web-based diagnostics for quick and easy troubleshooting

Versatile and convenient
Four 10/100 Ethernet (RJ-45) ports enable flexible, high-speed connectivity

Integrated 802.11b/g wireless access point and up to two lines (RJ-11) of full-featured telephone service provide maximum convenience in a small footprint

Advanced router and firewall

Reliable
Power management enhancements optimize Wi-Fi handset battery performance

Integrated field-replaceable Lithium-ion backup battery

Expandable
Features up to 16 Service Identifiers (SIDs) for future expansion of enhanced features

Remote configuration and monitoring
Help to reduce support costs and aid troubleshooting

DOCSIS / Euro-DOCSIS 2.0 and PacketCable / Euro-PacketCable 1.0 certified; interoperable with DOCSIS / Euro-DOCSIS 1.0 and 1.1 and compatible with PacketCable / Euro-PacketCable 1.5; SIP; CableHome™ 1.1 optional

Signaling
Support for Network Call Signaling (NCS) and Session Initiation Protocol (SIP)

Telephony
Support for G.711 as well as multiple low-rate vocoders

Automatic fax modem processing, including support for T.38 protocol

Telco interfaces configurable to meet multiple market standards

Enhanced Power Management

The SVG2501 offers a number of power management features, including 802.11e U-APSD (WMM Power Save), which enable users to optimize the battery life of their Wi-Fi handset.

A highlight of the 802.11e power management standard is the synchronization between the SVG2501 and the Wi-Fi handset. The Wi-Fi handset receives data from the SVG2501 at infrequent intervals, allowing it to enter sleep mode when the phone is not in use, thereby minimizing the phone's "on-time" and improving its battery utilization.

Built-In Security

The SVG2501 is equipped with a number of security features, including:

- 802.11i security (WEP-64/128, WPA-PSK, WPA, WPA2, TKIP, AES, 802.1x)
- 802.11i (pre-authentication)
- IPSEC/PPTP/L2TP NAT pass-through for VPN tunneling
- Wi-Fi–Protected Setup™ (WPS)
- User-friendly, secure mobile pairing
    - Wi-Fi Wizard removes end-user complexity for secure PC client setup
    - Push button configuration for WPS compliant clients

Provider Benefits

Single-infrastructure delivery of multiple services
One infrastructure for communication services, providing the ability to offer customers both residential and cellular phone service, simultaneous use of phone lines and high-speed data services, and a single bill for their voice and data services.

Better coverage for more satisfied customers
Increased customer satisfaction from improved in-home coverage, a key user network quality metric.

Value-added service packages
Improved customer retention through unique value-added services and the packaging of mobile and landline phone services.

Flexible pricing options
Greater pricing flexibility resulting from multi-service packaging and migration of customers to higher-revenue/-margin wireless offerings.

All-in-one solution for secure voice and data services
A single product solution with support for a variety of CLASS features provided today by the phone company (e.g., caller ID, call waiting, and call forwarding), advanced routing features, and an integrated firewall to help provide Internet security.

Consumer Benefits

Lower-cost cellular calls
Reduced cellular bill resulting from off-loading the cellular air-interface when calls are made from the Wi-Fi handset in the home through the SVG2501.

Better Wi-Fi and cellular coverage
Improved in-home coverage and reliability, which is often limited with cellular service.

Higher-quality cellular
Wireline audio quality when passed over the SVG2501's Wi-Fi connection.

One-number convenience
Convenience of a single mobile number and voicemail service, whether inside or outside the home.

Motorola believes in "going green" — we have a global commitment to sustaining the environment.
Motorola has been working for years to continually improve our environmental profile. We are in step with our customers and their increasing interest in partnering with a company that will help them reduce their carbon footprint, while offering compelling products that will help them grow their eco-conscious customer base.

Motorola designed the SVG2501 to minimize its impact on the environment.
Motorola's gateways comply with international environmental and energy efficient standards, including ENERGY STAR qualified power supplies, California Efficiency Compliance for the power supply, European Code of Conduct compliance for both the power supply and modem, and lead-free circuit boards, as certified by RoHS compliance.

Packaging
The SVG2501 uses Motorola's new, environmentally friendly package design; our gateways ship in single pack boxes. By both eliminating the suspension plastic and reducing the box size, Motorola is helping to reduce the environmental impact of the SVG2501. As an even more impactful step, operators may choose to receive the products in a bulk package, thus reducing the extra waste and transport weight associated with single packages. Motorola's single and bulk packaging solutions eliminate excess USB cables. Additionally, customers have the option to reduce the number of cables shipped with each unit. The packaging is 100% recyclable. Our packaging is now labeled with standard recycling codes (such as ♳) to make it easier for our customers to identify recycling opportunities.

Specifications

GENERAL	
Standards	DOCSIS 2.0 and PacketCable 1.0 certified; interoperable with DOCSIS 1.0 and 1.1 and compatible with Packet Cable 1.5; SIP; CableHome 1.1 optional
Cable Interface	F-Connector, female, 75 Ω
Network Interface	Four 10/100 Ethernet ports
Wireless Interface	802.11b/g Wi-Fi
Dimensions	9.2 in H x 1.5 in W x 6.1 in D (23.4 cm x 3.81 cm x 15.6 cm)
Regulatory	RoHS compliant, FCC, UL listed (U.S. and Canada), Industry Canada, ENERGY STAR qualified, CoC compliant

INPUT POWER	
North America	105 to 125 VAC, 60 Hz
Outside North America	100 to 240 VAC, 50 to 60 Hz

ENVIRONMENTAL	
Operating Temperature	32 °F to 104 °F (0 °C to 40 °C)
Storage Temperature	
Without Battery	–22 °F to 158 °F (–30 °C to 70 °C)
With Battery	–14 °F to 140 °F (–10 °C to 60 °C)
Store replacement batteries at 25 °C for optimal storage life	
Operating Humidity	5 to 95% R.H. (non-condensing)

DOWNSTREAM	
Modulation	64 or 256 QAM
Maximum Data Rate*	38 Mbps (256 QAM at 5.361 Msym/s)
Bandwidth	6 MHz
Symbol Rates	64 QAM @ 5.069 Msym/s, 256 QAM 5.361 Msym/s
Operating Level Range	–15 to +15 dBmV
Frequency Range	88 to 860 MHz
Input Impedance	75 Ω (nominal)

UPSTREAM	
Modulation	8***, 16, 32***, 64***, 128*** QAM or QPSK
Maximum Channel Rate	30 Mbps**
Bandwidth	200 kHz, 400 kHz, 800 kHz, 1.6 MHz, 3.2 MHz, 6.4 MHz***
Symbol Rates	160, 320, 640, 1280, 2560, and 5120*** ksym/s
Operating Level Range	
A-TDMA	8 to 54 dBmV (32 QAM, 64 QAM) 8 to 55 dBmV (8 QAM, 16 QAM) 8 to 58 dBmV (QPSK)
S-CDMA	8 to 53 dBmV (all modulations)
Output Impedance	75 Ω (nominal)
Frequency Range	5 to 42 MHz (edge to edge)

TELEPHONY	
Line Type	2-wire
Hook State Signaling	Loop start
Maximum Line Length (one-way)	500 ft (AWG 26/0.4 mm @ 65 °C)
DTMF Level Sensitivity Range	0 and –20 dBm
Speech Coding	64 kbps PCM, µ-law or A-law companding; support for G.711, G.726, G.728, G.729, G.723.1, iLBC, and BV16/32 codecs
Line Termination	Configurable based on market needs
Loss Plan	
Receive	(D/A) 4 dB
Transmit	(A/D) 2 dB (configurable based on market needs)
Loss Plan Tolerance	±1 dB; 60/50 Hz loss >20 dB (one-way; referenced to off-hook loss at 1,004 Hz)
Ringing Wave Form	Quasi-trapezoidal
Ringing Crest Factor	1.2 <CF <1.6

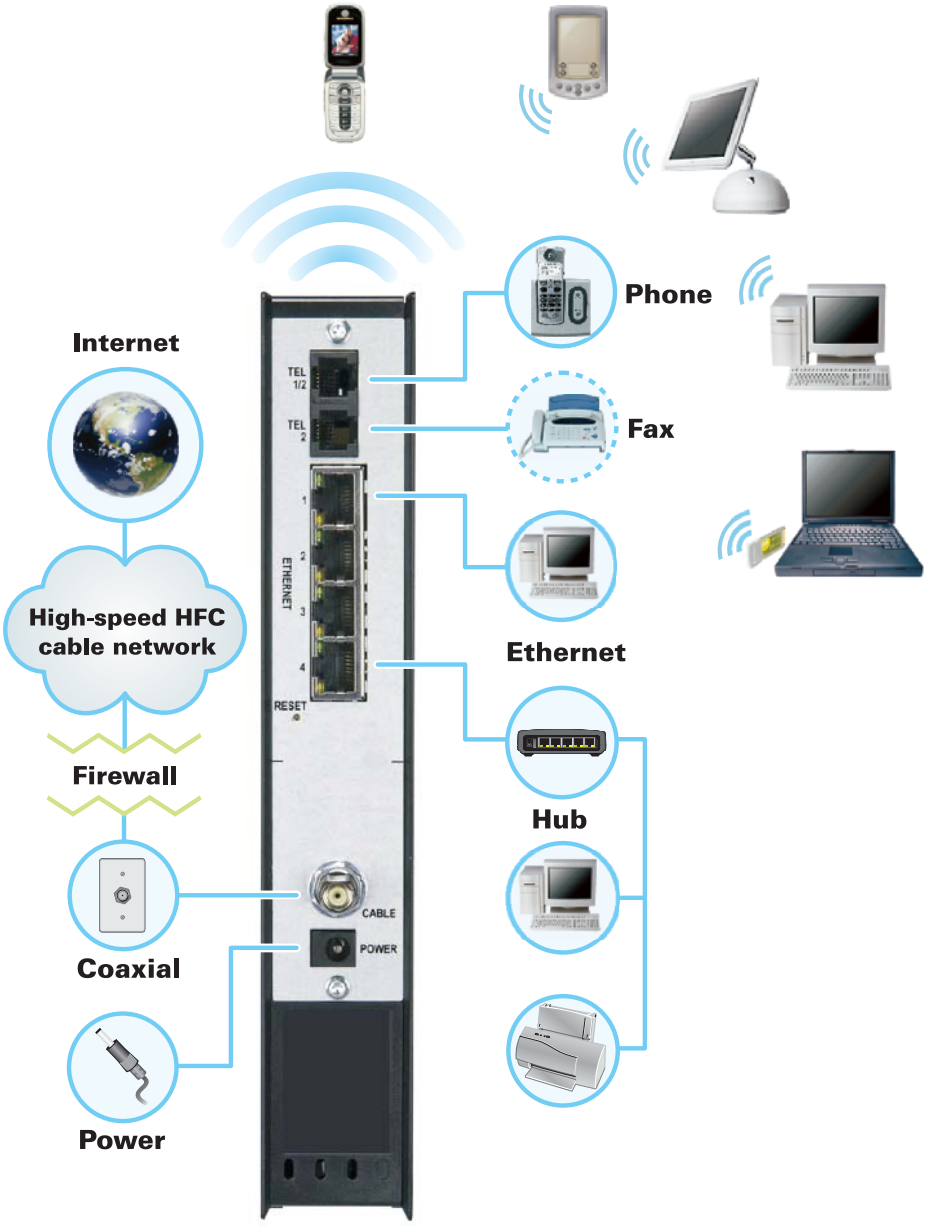
NETWORK	
Gateway	DHCP, NAT, VPN tunneling; static routing and dynamic IP routing (RIPv1, RIPv2); SPI firewall with DoS protection and intrusion prevention; port, packet, and URL keyword filtering; full suite of ALGs; UPnP IGD 1.0
Wireless LAN	802.11b/g Wi-Fi, WDS bridging, 802.11e WMM admission control, QoS
Power Management	802.11e WMM power save/U-APSD (Unscheduled-Automatic Power Save Delivery)
802.11i Security	WEP-64/128, WPA-PSK, WPA, WPA2, TKIP, AES, 802.1x, 802.11i (pre-authentication)
Mobile Pairing	User-friendly Wi-Fi–protected setup (WPS) for secure mobile pairing with compatible dual-mode handset
Regulatory Domains	To include US, Canada, ETSI, World
Transmit Power Output	
IEEE 802.11b	19 dBm +1/–1.5 dB at all rates in all channels
IEEE 802.11g	16 dBm +1/–1 dB at 54 Mbps in all channels
Receiver Sensitivity	> –90 dBm at 11 Mbps; > –74 dBm at 54 Mbps

Product features may vary by model type.

All features, functionality, and other product specifications are subject to change without notice or obligation.

Plug-and-play

Simple to set up and easy to use—just plug it in and go.



[1] Certain features may not be activated by your service provider, and/or their network settings may limit the feature's functionality. Additionally, certain features may require a subscription. Contact your service provider for details. All features, functionality, and other product specifications are subject to change without notice or obligation. Your service provider, not Motorola, is responsible for the provision of Voice-over-IP (VoIP) telephony services through this equipment. Motorola shall not be liable for, and expressly disclaims, any direct or indirect liabilities, damages, losses, claims, demands, actions, causes of action, risks, or harms arising from or related to the services provided through this equipment. Important: Be aware that you will not be able to make any calls using this VoIP device if your broadband connection is not functioning properly. Battery backup times may vary based on many factors, including the battery age, charging state, storage conditions, and operating temperature, as well as by factors such as data activity and length of active telephone calls.

MOTOROLA

Pb-free

RoHS COMPLIANT

MEMBER WiFi ALLIANCE

ENERGY STAR

Powered by an ENERGY STAR® qualified adapter for a better environment

www.motorola.com/broadband

MOTOROLA and the Stylized M Logo are registered and the EcoMoto name and logo are trademarked in the U.S. Patent and Trademark Office. SURFboard is a registered trademark of General Instrument Corporation, a wholly-owned subsidiary of Motorola, Inc. Wi-Fi and the Wi-Fi Alliance logo are registered marks and Wi-Fi Protected Setup is a trademark of the Wi-Fi Alliance. DOCSIS and CableLabs are registered trademarks and PacketCable and CableHome are trademarks of Cable Television Laboratories, Inc. ENERGY STAR is a registered mark owned by the U.S. government. Windows is a registered trademark and Vista is a trademark of Microsoft Corporation in the U.S. and/or other countries. Linux® is a registered trademark of Linus Torvalds in the U.S. and other countries. UNIX is a registered trademark of the Open Group in the United States and other countries. Macintosh is a registered trademark of Apple Computer, Inc. All other product or service names are the property of their respective owners.
© Motorola, Inc. 2009. All rights reserved.

569779-001-a 06/09